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## (54) A CONTAINER WITH SNAP-OFF COVER

(71) We, SUPERFOS EMBALLAGE a/s a Danish company of Agerup, 4390 Vip-perød, Denmark do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

The present invention relates to a con-  
 10 tainer with a snap-off cover.

According to the present invention there is provided a container with a snap-off cover said container having a wall, an opening, an outwardly projecting peripheral  
 15 flange located adjacent said opening, and a cover having a peripheral rim portion with a downwardly directed peripheral flange having a shoulder disposed for snap-action engagement with the peripheral flange of  
 20 the container to releasably secure said cover to the container to cover the opening thereof, said container having a sharp sealing edge forming a sealing line between the container and the cover and said peripheral  
 25 flange of the container and the shoulder of the cover being positioned in relation to said sharp sealing edge to establish an axial pre-stress condition forcing the cover and container together along said sharp  
 30 sealing edge.

With the cover secured to the container, the former is stressed in the axial direction of the container, to thereby achieve in a simple manner an effective seal between  
 35 the sealing edge of the container and the cover along the sealing line.

The stressing in the axial direction has the added effect of rendering tolerances in the horizontal dimensions of the com-  
 40 ponent parts non-critical, which is important to the manufacture thereof.

The flanged portion of the container may be formed quite simply by moulding and yet be fully adequate to ensure stressing of the  
 45 cover in the axial direction of the con-

tainer. The peripheral flange of the con-  
 tainer may slope downwardly from the wall of the container this arrangement being ex-  
 pedient as it enables the spacing necessary  
 between sealing edge and locking edge to  
 50 be obtained, without the connection be-  
 tween cover and container becoming so  
 rigid that it becomes difficult to affix or  
 remove the cover. The risk of poor sealing  
 due to malformation during the manufac-  
 55 turing process is eliminated also. Mal-  
 formation has occurred when eyes are  
 provided for handles, this having led to the  
 formation of irregularities adjacent the top  
 edge of the container. This presented a  
 60 serious problem in many heretofore em-  
 ployed methods as it appreciably reduced  
 the possibility of obtaining a complete seal  
 between the top edge and cover of known  
 65 containers. Spacing the flange below the  
 opening of the container also contributes to  
 the achievement of an effective seal, owing  
 to the fact that droplets which might es-  
 cape between the cover and the sharp seal-  
 70 ing edge of the container will be trapped in  
 the space defined by the upper surface of  
 the container flange, that portion of the  
 cover projecting beyond the sharp sealing  
 edge of the container and the downwardly  
 75 directed peripheral flange portion of the  
 cover.

Preferably the rim portion of the cover  
 located radially outside the sealing line is,  
 in the normal state of the cover, inclined  
 outwardly upwardly whereby the necessary  
 80 stressing of the affixed cover is produced  
 by applying a downwardly directed pres-  
 sure along the periphery of the edge  
 flange when securing same. It will be ap-  
 85 preciated that the surface of the cover may  
 also be completely flat in normal state,  
 and the prestressing is produced by the  
 rim portion of the cover surface located  
 radially outside the sealing line being bent  
 90 slightly downwardly relative to the other

portion of the cover surface when affixing the cover.

Without affecting the vertical stressing of the cover, the lower surface of the cover 5 radially outside the sealing line may be provided with a peripheral projecting rib engaging the outer surface of the container wall, to thereby further ensure the sealing effect.

10 Embodiments of the present invention will now be described with reference to the drawings, in which

Fig. 1 is an axial section through a container and its cover,

15 Fig. 2 is a detail of the cover of Fig. 1 on an enlarged scale, and

Fig. 3 shows diagrammatically a modified container and its cover in axial section.

20 The container or bucket illustrated in Fig. 1 has a slightly tapered side wall 1 and eyes 2 projecting from the upper portion of the wall, to permit mounting of a handle. The top portion 3 of the container has, spaced from the top edge of the container an outwardly and downwardly directed flange 4 which terminates at its end in a downwardly directed face 5. The upper rim portion 6 of the container wall forms part of the container top portion 3 and terminates in a sharp edge which co-operates with a rim flange of a cover 7 to provide engagement along a sealing line. Said cover has a substantially flat central surface 8, the area of which is sufficient to accommodate the bottom of a similar container on said central surface. At its periphery the surface 8 forms a sharp, almost right-angled bend extending into an upwardly directed flanged portion 9 which engages the inner surface of the top portion 3 of the container wall. Said flanged portion 9 forms the inner leg of the cross-sectionally W-shaped rim flange having a substantially axial extending circumferential rib 10 which engages the outer surface of the top portion 3 of the container wall, and an outermost peripheral flanged portion 11, said flanged portions extending from a common annular top portion 12. At the free downwardly directed rim of the outer flanged portion 11 there is formed a shoulder 13 which, when positioning the cover 7 on the container, is adapted by snap action to slide under the face 5 of the container flange 4, by applying a downward pressure to the top portion 12 of the rim flange of the cover, thus providing the sealing line engagement between the rim portion 6 of the container and the cover.

60 The otherwise flat central surface 8 of the cover is formed with a downwardly directed reinforcing rib 15 which will not prevent a load, for example another container from being placed on top of the

cover. It will be seen that owing to the inner leg of the rim flange 9 being approximately parallel to the top portion 6 of the container wall, such vertical load on the central surface 8 of the cover is incapable of transmitting torsional forces to the flanged portions, and the latter, therefore, will not be deformed to the detriment of a tight seal between the cover and the container or to involve the risk of upsetting 75 a stack of containers. By depression of the top portion 12 of the rim flange, the cover is prestressed exclusively in the axial direction of the container, and removal and replacement of the cover, which is locked by 80 snap action, is a simple matter without the necessity for tools. Prestressing in the axial direction offers a particular advantage when applied to square containers where the seal of the cover is otherwise dependent on extremely fine tolerances. Prestressing of the cover in the axial direction offers the added manufacturing advantage of tolerances in the horizontal dimensions of the component parts being non-critical. 90 Also, the simple configuration of the flanged portion of the container is an advantage from a manufacturing point of view as the simple outwardly directed flange may be moulded without the necessity for cores to be extracted in the direction of the container wall, which, e.g., is quite impossible when, as shown in Fig. 1, the container has outwardly directed eyes 2 for the mounting of handles in the immediate proximity of the flanged portion. 100

In the container shown in Fig. 3, the rim flange of the cover may have a top portion forming an extension of the central surface 8, the flanged portion 9' extending from 105 the latter being an axially extending circumferential flange which engages the inner surface of the container wall 1, while the outer flanged portion 11 of the cover is formed as in the embodiment of Fig. 1, 110 having a shoulder 13 which engages below the face 5 of the container flange 4.

#### WHAT WE CLAIM IS:—

1. A container with a snap-off cover said container having a wall, an opening, 115 an outwardly projecting peripheral flange located adjacent said opening, and a cover having a peripheral rim portion with a downwardly directed peripheral flange having a shoulder disposed for snap-action engagement with the peripheral flange of the container to releasably secure said cover to the container to cover the opening thereof, said container having a sharp sealing edge forming a sealing line between the container and the cover and said peripheral flange of the container and the shoulder of the cover being positioned in relation to said sharp sealing edge to establish an axial pre-stress condition forcing the cover 130

and container together along said sharp sealing edge.

2. A container with a snap-off cover as claimed in claim 1, wherein the peripheral  
5 flange of the container slopes downwardly from the wall of the container, and the sharp sealing edge is formed by the top of the container wall.

3. A container with a snap-off cover as  
10 claimed in claim 1 or claim 2, wherein said cover has a circular downwardly extending rib that engages the outer side of the container.

4. A container with a snap-off cover as  
15 claimed in any one of the preceding claims,

in which a rim portion of the cover located radially outside said sealing line is outwardly upwardly inclined.

5. A container with a snap-off cover, substantially as hereinbefore described with 20 reference to Figs. 1 and 2 or Fig. 3 of the accompanying drawings.

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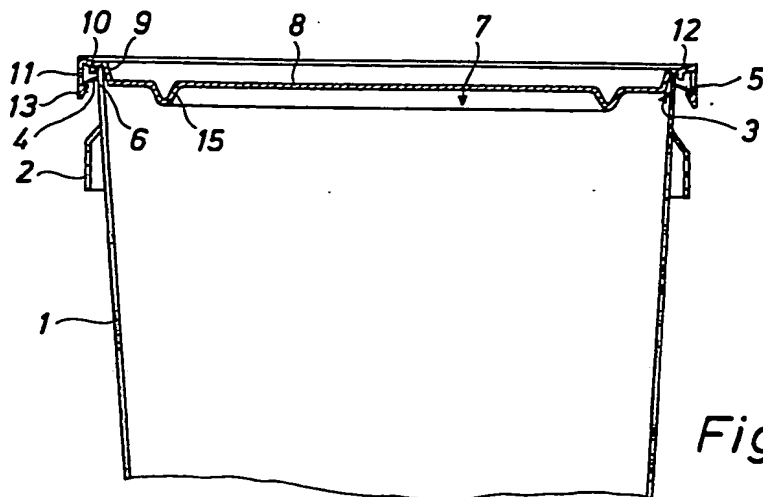


Fig. 1

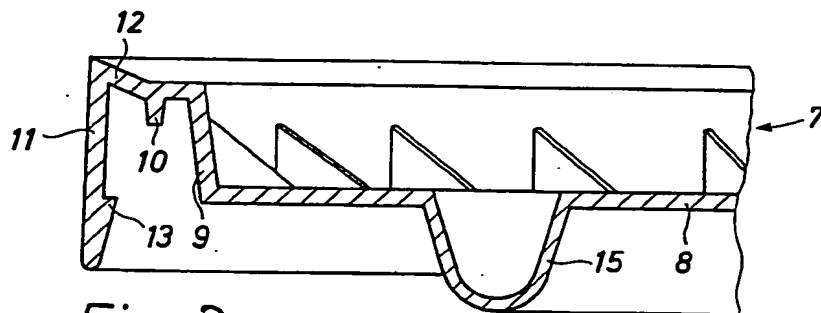


Fig. 2

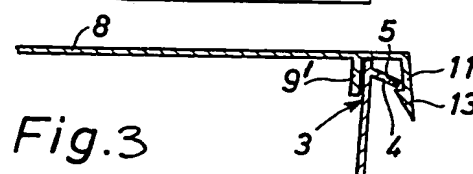


Fig. 3